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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,072	04/12/2004	Chia-Hung Lin	ACMP0093USA	3071
27765	7590	12/19/2006	EXAMINER	
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION			SIM, YONG H	
P.O. BOX 506			ART UNIT	PAPER NUMBER
MERRIFIELD, VA 22116			2635	
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE		DELIVERY MODE	
3 MONTHS	12/19/2006		PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/709,072	LIN, CHIA-HUNG
	Examiner	Art Unit
	Yong Sim	2635

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-11 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892) .
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 – 6 and 7 – 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ben-David et al. (WO 01/95544).

Re claim 1, A projector (48, Fig. 3B) comprising: a housing (Pg. 6, lines 20 – 21; “The present invention is suitable for various types of electronic display devices, such as televisions and monitor devices.” A conventional television comprises a “housing.”); a light source (50, Fig. 3B) installed in the housing;

a color wheel (54, Fig. 3B) for separating the light from the light source into color light (Pg. 16, lines 4 – 5; “passing white light from a source through appropriate color filters to form colored light.”);

an image modulator for modulating the color light from the color wheel, and projecting the color light to form an image on a screen (60, Fig. 3B, Pg. 16, lines 11 – 14; “light illuminates spatial light modulator which determines the particular color for being displayed.”);

a control circuit (66, Fig. 3B) connected to the image modulator for controlling the image modulator to operate synchronously with the color wheel (Pg. 18, lines 8 – 9; “spatially modulated mask is synchronized by a timing system, according to the rotation of filter wheel);

and a scalar (72, 74, 76, Fig. 3B) connected to the image modulator for generating a gray-level image signal (Pg. 18, lines 8 – 18; “The brightness of that position is determined by the relevant data pixel in the image. The values for the pixels of the image are optionally and preferably retrieved from an image data file (a scalar for generating a grey-level image signal).” The determination of the brightness of each pixel translates to a gray-scale image.);

wherein the color light is modulated to form a gray-level image on the screen through a gray-level image signal outputted to the image modulator, and the image modulator is controlled to operate synchronously with the color wheel according to the gray-level image (Pg. 18, lines 8 – 13; “the data into spatially modulated mask is synchronized by a timing system according to the rotation of filter wheel. The light beam is spatially modulated by spatially modulated mask, so that the apparent brightness of each primary color varies at viewing screen.”).

Re claim 2. The projector of claim 1 wherein the image modulator is a digital micromirror device (DMD) (Pg. 17, lines 10 – 14; “modulation type include DMD.”).

Re claim 3, The projector of claim 1 wherein the gray-level image has 32 gray-levels (Pg. 22, lines 2 – 3; “The various “gray levels” of the illumination can be achieved in different ways depending on the type of spatially modulated mask is used.”).

Re claim 4. The projector of claim 1 wherein gray-level images are generated for 3 colors (Pg. 18, line 1; “Filter wheel holds at least four color filters.”).

Re claim 5. The projector of claim 4 wherein the 3 colors having gray-level images are red, green, and blue (Pg. 20, line 3 – 4; “obtain digital RGB (three-color) image data 72.” Note that image data 72 corresponds to the scalar as discussed in claim 1, which is used to generate gray-level images.)

Claim 6 recites limitations that have been covered in claim 1. Therefore, it has been analyzed and rejected w/r to claim 1. With respect to said method for adjusting, the applicant merely recites the elements and limitations as described in claim 1, and does not disclose a specific method of adjusting a projector. Therefore, it has been rejected w/r to claim 1.

Claim 8 recites limitations that have been covered in claim 2. Therefore, it has been analyzed and rejected w/r to claim 2.

Claim 9 recites limitations that have been covered in claim 3. Therefore, it has been analyzed and rejected w/r to claim 3.

Claim 10 recites limitations that have been covered in claim 4. Therefore, it has been analyzed and rejected w/r to claim 4.

Claim 11 recites limitations that have been covered in claim 5. Therefore, it has been analyzed and rejected w/r to claim 5.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ben-David et al. (WO 01/95544) in view of Conner et al. (US 5,625,434).

Re claim 7, Ben-David et al disclose the method of claim 6, but does not disclose the step (c) further comprising using the control circuit to display an OSD (on screen display) for adjusting the color wheel delay on the screen, and via the OSD adjusting the image modulator to operate synchronously with the color wheel using the plurality of gray-level images with the predetermined color, but Conner et al. disclose a digital motor controller for controlling both the phase and speed (color wheel delay) of a brushless DC motor which permits the color wheel to be synchronized to the data currently being displayed (on screen display, Col. 2, lines 38 - 47).

Therefore, taking the combined teachings of Ben-David et al. and Conner et al., as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the motor controller for controlling a brushless DC motor as taught by Ben-David to the method for adjusting a projector of Ben-David to obtain the method for adjusting the color wheel delay on the screen by controlling a brushless DC motor in all-digital design which permits logic circuitry for controlling both speed and phase of the motor (Col. 1, lines 64 – 67).

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Minami et al. (US 6,912,017 B1) disclose a display device using a color wheel having a color filter Cw, in addition to normal color filters corresponding to the three primary colors.

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tomiya (US 2003/0179347 A1) discloses a projector device made up of a digital mirror device having several hundreds of thousands of mirror elements which is capable of reducing a difference in chromaticness caused by performance/characteristic variation between filters or between light sources.

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Smith (US 2001/0043288 A1) discloses a motor speed resolution enhancement method and system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong Sim whose telephone number is (571) 270-1189.

The examiner can normally be reached on Monday - Friday (Alternate Fridays off) 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on (571) 272-2000. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YHS


VU LE
SUPERVISORY PATENT EXAMINER